$$\Leftrightarrow \int_{-1}^{1} \sqrt{1+x}\left|e^{\frac{-x}{n}}-1\right|dx \leq \left(e^{\frac{1}{n}}-1\right)\underbrace{\int_{-1}^{1}\sqrt{1+x}\,dx}$$

$$\Leftrightarrow \int_{-1}^{1} \sqrt{1+x}\left|e^{\frac{-x}{n}}-1\right|dx \leq \frac{4}{3}\sqrt{2}\left(e^{\frac{1}{n}}-1\right) \quad (2)$$

(1) et (2) donnent $\underline{|A_n - I| \leq \frac{4}{3}\sqrt{2}\left(e^{\frac{1}{n}}-1\right)}$

e-

$$\left.\begin{array}{l} |A_n - I| \leq \frac{4}{3}\sqrt{2}\left(e^{\frac{1}{n}}-1\right); \forall n \in IN^* \\ \lim\limits_{n\to+\infty}\left[\frac{4}{3}\sqrt{2}\left(e^{\frac{1}{n}}-1\right)\right] = 0 \end{array}\right\} \Rightarrow \lim_{n\to+\infty}(A_n - I) = 0$$

$$\Updownarrow$$

$$\lim_{n\to+\infty} A_n = I = \frac{4}{3}\sqrt{2}$$